

### **REMARKS**

Claims 10-23 are all the claims pending in the application. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

#### **Claim Rejections - 35 U.S.C. § 103**

- The Examiner rejected claims 10-17, 22, and 23, under §103(a) as being unpatentable over US Patent 5,807,588 to Todaka et al. (hereinafter Todaka) in view of any one of JP 59-85729 to Ishikawa et al. (hereinafter Ishikawa) and US Patent 5,861,182 to Takizawa et al. (hereinafter Takizawa). Applicants respectfully traverse this rejection because the references fail to teach or suggest all the elements as set forth in the claims.

The Examiner applied a similar rejection based on Todaka in an Office Action mailed on October 11, 2001. Applicants responded by arguing that the Examiner's proposed modification would impermissibly change the principle of operation in Todaka. The Examiner then withdrew the rejection.

In the present case, the Examiner asserts that it would be obvious to modify Todaka to include a metering screw and plunger instead of just a screw extruder.<sup>1</sup> However, such a modification of Todaka would change his principle of operation. Yet if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.<sup>2</sup>

Todaka operates on the principle of changing the speed of the molding machine actuator, i.e., motor 10 which drives screw extruder 15. In other words, Todaka is directed to devices that control a screw rotational speed in such a manner that the discharged amount of an extrusion material is relatively changed.

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<sup>1</sup> Office Action at paragraph bridging pages 4 and 5.

<sup>2</sup> *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). See also MPEP § 2143.01.

It is this type of device, wherein control of the extrusion discharge amount is controlled by a change in the screw extruder rotational speed, that the present invention obviates. That is, the present invention allows the screw rotational speed to remain constant, and instead adjusts the amount of extrusion material with a plunger attached to the screw device.

On the other hand, Todaka is directed to an improvement in an apparatus wherein the extrusion discharge amount is adjusted by a change in the screw rotational speed. That is, Todaka discloses that “it can be thought of to change peripheral speed  $V$  of workpiece ... and at the same time, control working speed of an extrusion molding machine actuator (e.g., screw rotational speed) in such a manner that the discharged amount of an extrusion material is relatively changed to follow up changes in peripheral speed  $V$ .”<sup>3</sup> However, Todaka discloses that there is a problem with such systems in that “the delay in control becomes so remarkable that precise cross-sectional shape of moldings cannot be maintained.”<sup>4</sup> Thus, an object of Todaka’s invention is to overcome such a problem by reducing the delay in control of the screw rotational speed. Indeed, Todaka achieves this objective by predicting the change in speed of the workpiece, and then adjusting the screw rotational speed in advance of such a speed change.<sup>5</sup>

But the Examiner proposes changing Todaka’s screw extruder into a combination of screw extruder and plunger, wherein the plunger discharges the extrusion material. However, in such a system, wherein the plunger discharges the extrusion material, the rotational speed of the screw extruder would not control the amount of extrusion material discharged; indeed, the rotational speed of the screw extruder would be irrelevant, as in the present invention. Thus, such a modification of Todaka impermissibly would change his principle of operation.

For the above reasons, claims 10-17, 22, and 23, are not rendered obvious by Todaka in view of Ishikawa or Takizawa.

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<sup>3</sup> Todaka at col. 2, lines 6-14.

<sup>4</sup> Todaka at col. 2, lines 25-34.

<sup>5</sup> Todaka at col. 4, lines 1-7, 21-24, 27-31, 45-49, and 54-58.

- The Examiner rejected claims 18-21 under §103(a) as being unpatentable over US Patent 5,795,421 to Takahashi et al. (hereinafter Takahashi) in view of Todaka and any one of Ishikawa and Takizawa. Applicants respectfully traverse this rejection because: there is no motivation to combine the references as suggested by the Examiner; and the Examiner's interpretations of Ishikawa and Takizawa are incorrect.

**First**, there is no motivation to combine Takahashi with either Ishikawa or Takizawa because they are directed to extruders that work at cross-purposes to each other. That is, Takahashi is directed to continuously extruding a resinous frame in a predetermined shape from a resin shaping die to form a shaped product, which is then press-fitted around a windowpane.<sup>6</sup> On the other hand, Ishikawa and Takizawa are directed to machines wherein a predetermined amount of preplasticized resin is injected into a mold to form an article.<sup>7</sup> In the case of Takahashi, because the window pane has a long peripheral edge, the resin must be continuously extruded for a long period of time, i.e., long enough so that the resinous frame extends around the periphery of the windowpane. On the other hand, Ishikawa and Takizawa intermittently inject into a mold of defined volume an amount of resin that is held within the plunger. One of ordinary skill in the art would not use such an intermittent injection by plunger in Takahashi's apparatus because then the resinous frame would not have consistent properties nor would it be smoothly formed. Instead, the frame would be formed in fits and starts, wherein the properties of the resin—most notably due to variation in temperature—may vary from injection to injection thereby disadvantageously causing varied characteristics in the frame around the window panel.

In another part of the Office Action, the Examiner makes the bald assertion that “plunger type molding equipment is considered conventional means for extruding simple long profiles such as bars and pipes.”<sup>8</sup> The Examiner is mistaken. If the Examiner persists in maintaining this

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<sup>6</sup> Takizawa at col. 1, lines 5-13, and col. 6, lines 35-53.

<sup>7</sup> English translation of Ishikawa at the paragraph bridging pages 1 and 2, as well as in the first paragraph on page 2; and Takizawa at col. 1, lines 9-14.

<sup>8</sup> Office Action at page 4, lines 1-2.

position, Applicants respectfully request that he come forward with evidence to back up his position.

**Second**, there is no motivation for the Examiner's attempted combination of Todaka with either Ishikawa or Takizawa because these references operate at cross-purposes to one another. That is, as noted above, Todaka controls the amount of extruded resin by more accurately controlling the speed of the screw's rotation. In contradistinction to Todaka's manner of operation, Ishikawa and Takizawa control the amount of resin extruded by controlling the amount of resin charged into the plunger's cylinder. Accordingly, one of ordinary skill in the art—looking at the teachings of the references as a whole—would not have combined the teachings of Todaka with those of Ishikawa or Takizawa, as was suggested by the Examiner.

**Third**, the Examiner impermissibly picks and chooses elements from the prior art, by using the claims as a guide, to reconstruct the Applicants' invention. But it is not obvious to do so.<sup>2</sup> That is, the Examiner picks Takahashi's extrusion machine that applies a continuous resin frame to a windowpane, picks Todaka's control method that applies to an in-line screw type extruder, and picks either Ishikawa's or Takizawa's screw and plunger arrangement for injecting resin into a mold. However, Applicants do not claim to have invented a machine or method for applying a resinous bead to a sheet of glass. Similarly, Applicants do not claim to have invented a metering screw with a plunger. Instead, Applicants have claimed to discover the advantage of using the two elements in combination.

Specifically, it is Applicants who disclose the drawbacks of using a screw extruder in connection with a method for forming a resinous frame. And it is Applicants who disclose the solution to that problem. That is, Applicants disclose the problems of using a conventional screw extruder stem from the required change in moving speed of a glass sheet, when a resinous bead is applied at the corners. At the corners, the sheet moves more slowly with respect to the

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<sup>2</sup> *Ex Parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Interf. 1985). See also: *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ.2d 1780, 1784 (Fed. Cir. 1992)(citing *In re Gorman*, 933 F.2d 982, 987, 18 USPQ.2d 1885, 1888 (Fed. Cir. 1991) ("It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious.")).

apparatus applying the resinous bead. Accordingly, the amount of resinous material to be applied in the corners must be reduced.<sup>10</sup> In the past, attempts were made to solve the problem by changing the rotational speed of the metering screw.<sup>11</sup> However, the problem with such a strategy is that the rotational speed of the metering screw cannot be changed instantaneously and, therefore, the output from the extruder only gradually changes. The change is not quick enough to keep the bead uniform at the corners.<sup>12</sup> Todaka attempts to solve this problem by more accurate control of the screw's speed. In a different manner of solving this problem, Applicants have discovered that by using a plunger in connection with the metering screw, a uniform resinous bead can be applied to a sheet of glass even at corners.<sup>13</sup>

Most if not all inventions arise from a combination of old elements.<sup>14</sup> Thus, every element of a claimed invention—such as a metering screw, and a plunger, as in the present case—may often be found in the prior art.<sup>15</sup> However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. *Id.* Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant.<sup>16</sup>

“Although the suggestion to combine references may flow from the nature of the problem, ‘defining the problem in terms of its solution reveals improper hindsight in the

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<sup>10</sup> Specification at paragraph bridging pages 2 and 3, and page 4 line 4 - page 5, line 7.

<sup>11</sup> Specification at page 5, lines 8-26.

<sup>12</sup> Specification at page 5, line 27 - page 6, line 18.

<sup>13</sup> Specification at page 12, line 6 - page 15, line 18.

<sup>14</sup> *In re Kotzab*, 55 USPQ2d at 1316 (citing *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998)).

<sup>15</sup> *Id.*

<sup>16</sup> *In re Kotzab*, 55 USPQ2d at 1316 (citing *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); and *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)).

selection of the prior art relevant to obviousness.”<sup>17</sup> Therefore, “when determining the patentability of a claimed invention which combines two known elements, the question is whether there is something in the prior art as a whole to suggest the desirability, and thus obviousness, of making the combination.”<sup>18</sup> Here, as discussed above, there is not. Instead, Takashi discloses a method for preparing a panel with a resinous frame, and Ishikawa separately teaches the use of a metering screw wherein the screw is able to move in the axial direction to adjust back pressure (and also happens to include a plunger). Additionally, Takizawa separately discloses the use of an improved preplasticizer, having a plunger, to inject resin into a mold.

**Fourth,** The Examiner’s interpretations of Ishikawa and Takizawa are mistaken.

The Examiner mistakenly asserts that Ishikawa suggests that plungers are advantageous in protecting against resin leakage from the nozzle as compared to screw extruders.<sup>19</sup> Instead, Ishikawa notes that screw back pressure is beneficial to improve kneading of the resin, but causes the problems of: a) causing resin leakage at the stop valve 3 and at a gap between the injection plunger 4 and the plunger barrel 1; and b) causes an obstacle to molding because of inflow of the resin into a mold.<sup>20</sup> In order to prevent these problems, Ishikawa adjusts the back pressure on the screw extruder.<sup>21</sup> And Ishikawa adjusts the back pressure of the metering screw by “making the screw to be movable in the axial direction”.<sup>22</sup> That is, Ishikawa axially moves the screw between the positions shown in Figs. 3 and 4 in order to adjust the back pressure. Accordingly, it is not the provision of a plunger that protects against resin leakage from the

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<sup>17</sup> *Ecolchem, Inc. v. Southern California Edison Co.*, 56 USPQ2d 1065 (Fed. Cir. 2000) (citing *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 880, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998)).

<sup>18</sup> *Id.* at 1073 (citing *In re Beattie*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992)).

<sup>19</sup> Office Action at page 8, lines 2-8

<sup>20</sup> English translation of Ishikawa at the paragraph pages 1 and 2.

<sup>21</sup> English translation of Ishikawa at page 2, 1<sup>st</sup> full paragraph.

<sup>22</sup> Ishikawa at English Abstract, lines 1 and 2.

nozzle as compared to screw extruders. Thus, one of ordinary skill in the art following the teachings of Ishikawa to improve Takahashi, by preventing leakage from the nozzle, would incorporate Ishikawa's axially movable screw to adjust the back pressure; he would not have been motivated to include a plunger in Takahashi's apparatus.

With respect to Takizawa, the Examiner asserts that this reference suggests a preplasticizing apparatus comprising a screw extruder plasticizing region and a plunger pressurized injection cylinder are advantageous in terms of evenly plasticizing resin.<sup>23</sup> Although this may be true in some contexts, the Examiner leaps to the wrong conclusion when attempting to combine Takizawa and Takahashi. That is, Takizawa teaches that a preplasticizing apparatus comprising a screw extruder and a plunger pressurized injection cylinder are advantageous over an in-line screw type apparatus in the context of "injection" apparatuses, i.e., apparatuses that inject a predetermined amount of resin into a mold. Indeed, in explaining the field of his invention, Takizawa states that his "invention relates to a preplasticizing type injection apparatus for injecting resin **into a mold** ..." <sup>24</sup> See also Takizawa at: col. 2, lines 24-25 ("the resin in the front end portion of the injection cylinder is injected **into a mold** by means of the plunger ...")(emphasis added); col. 2, lines 23-33 (describing that a problem arises when the injection cylinder is not charged accurately with a predetermined amount of resin, namely, that "an insufficient amount of resin is injected **into the mold.**") (emphasis added); col. 10, lines 8-13 ("the resin in the injection cylinder is forced out **into a mold (not shown)** through the nozzle 11 of the injection cylinder.")(emphasis added).

On the other hand, as in Takahashi, in the context of a continuously extruded long article, an injection of a predetermined amount of material by plunger is not more advantageous than continuous extrusion by an in-line screw type extruder. In fact, as noted above, such intermittent injection of a long resinous frame would probably lead to inconsistent properties within the article, thereby defeating the asserted advantage of evenly plasticizing the resin for each shot.

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<sup>23</sup> Office Action at page 8, lines 2-7.

<sup>24</sup> Takizawa at col. 1, lines 8-14 (emphasis added).

Therefore, because Takahashi does not require a mold, one of ordinary skill in the art would not have been motivated to incorporate Takizawa's plunger therein.

Further, the Examiner asserts that Ishikawa and Takizawa are exemplary evidence of "well known preplasticizing extrusion molding apparatuses, which comprise a screw extruder in a plasticizing chamber connected to a plunger injection chamber."<sup>25</sup> However, that such apparatuses are "well known" is not the test for obviousness. As noted above, that the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness.

Moreover, the Examiner incorrectly asserts that Applicants have agreed to his characterization of Ishikawa as teaching the use of a plunger to sufficiently knead a resin without causing leakage or the inflow of the resin into a mold.<sup>26</sup> Instead, as noted above, Applicants assert that Ishikawa teaches the use of an axially movable screw to adjust back pressure and, thereby, prevent inflow of resin into a mold, i.e., Ishikawa does not disclose the plunger as preventing inflow of resin into a mold.

For at least any of the above four reasons, Takahashi, Todaka, Ishikawa, and Takizawa fail to render obvious claims 18-21.

### **Conclusion**

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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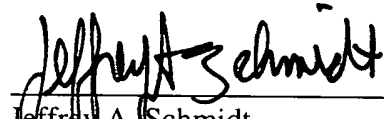
<sup>25</sup> Office Action at page 9, lines 5-8.

<sup>26</sup> Office Action at page 9, lines 10-12.



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